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**Polymerisable chiral cpds., used a dopants in liq. crystal compsns. - contg. condensable reactive gps., e.g. isocyanate, attached to a multivalent chiral gp., e.g. dianhydro-sorbityl, via spacer and mesogenic gps. (Ger)**

C97-007478 R(BE CH DE FR GB IT LI NL)
Addnl. Data: MEYER F, SIEMENSMEYER K, ETZBACH K, SCHUCHMACHER P
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Polymerisable chiral cpds. of formula (I) are new:
$(Z\text{-}Y^1\text{-}A\text{-}Y^2\text{-}M\text{-}Y^3)_nX$ (I)
in which A = a spacer; M = mesogenic gp.; Y, $Y^1$ = direct bond, O, S, COO, OCO, OCOO, CONR or NRCO; R = H or 1-4C alkyl; X = n-valent chiral gp.; n = 2-6; at least one Z is a residue with a NCO, NCS, CNO, thiirane, aziridine, COOH, OH or amino gp., and the other(s) is/are H or unreactive gp(s).

USE

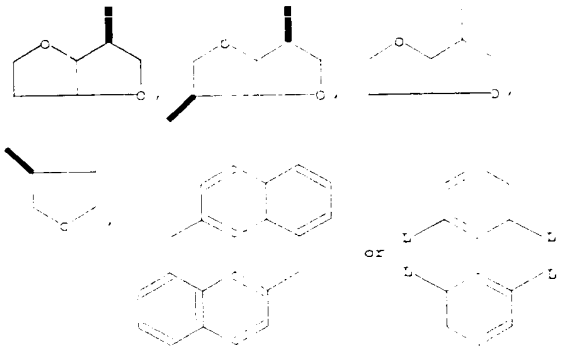
In electro-optical liq. crystal (LC) displays, as chiral dopants for nematic or cholesteric LC compsns., and as chiral dopants for the prodn. of coloured, reflecting, cholesteric LC layers (claimed).

ADVANTAGE

Provides chiral dopants with a high twisting power, capable of stable incorporation in cholesteric phases over a wide range of concns. without diffusing or crystallising out.

PREFERRED COMPOUNDS

n = 2; M = a gp. of formula $-(T\text{-}Y^4)_r\text{-}T\text{-}$ (Ia), in which T = divalent iso- or hetero- cycloaliphatic gp. or iso- or hetero-aromatic gp.; $Y^4$ = a bridging gp. as for $Y^3$, or $-CH_2O-$, $-OCH_2-$, $-CH{=}N-$ or $-N{=}CH-$; r = 0-3, pref. 0 or 1; T and $Y^4$ can be the same or different when r = more than 0 or more than 1; X = one of the following gps. as shown,



in which L = 1-4C alkyl or alkoxy, halogen, -COOR, -OCOR, -CONHR or -NHCOR. At least one of the gps. Z-$Y^1$- = -CNO or -NCO (i.e. with $Y^1$ = direct bond). Pref., gps. Z, Y1, $Y^2$, $Y^3$, A, M, R and L are each identical.

PREPARATION

Cpds. (I) are prepd. by known methods (eg. as described in DE-A 3917196) from chiral starting materials of formula $X(OH)_n$, which are generally commercially available cpds. Gps. Z, A, M and X are pref. coupled by condensation reactions with the formation of bridging gps. (Y), e.g. by reacting a mesogenic carboxylate with a chiral OH cpd. to form an ester, or two OH cpds. to form an ether, etc.

EXAMPLE

A mixt. of 4.5 g 4-isocyanatobenzoyl chloride, 3.5 g 2,5-bis-trimethylsilyloxy-1,4;3,6-dianhydrosorbitol, 20 mg 4-dimethylaminopyridine and 10 ml 1,2-dichlorobenzene was heated at 165°C for 11 hrs. with removal of $Me_3SiCl$ by distn. at 500 mbar. The mixt. was then worked up by cooling, filtration of the pptd. solid and recrystallisation, to give 2,5-bis-(4'-iso- cyanatobenzoyl)-1,4;3,6-diannydrosorbitol (I) in 83% yield.
(13pp1712DwgNo.0/0)
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